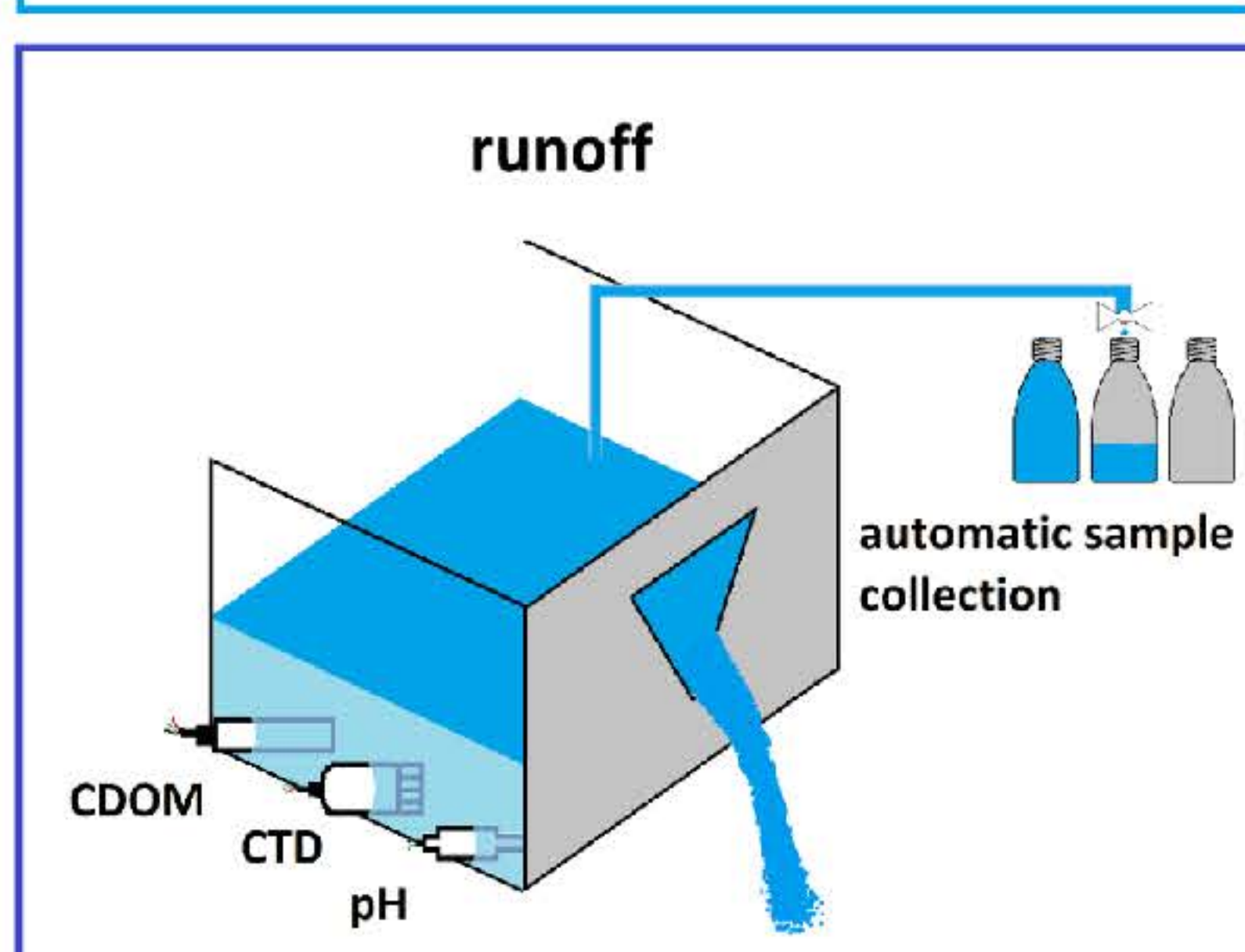
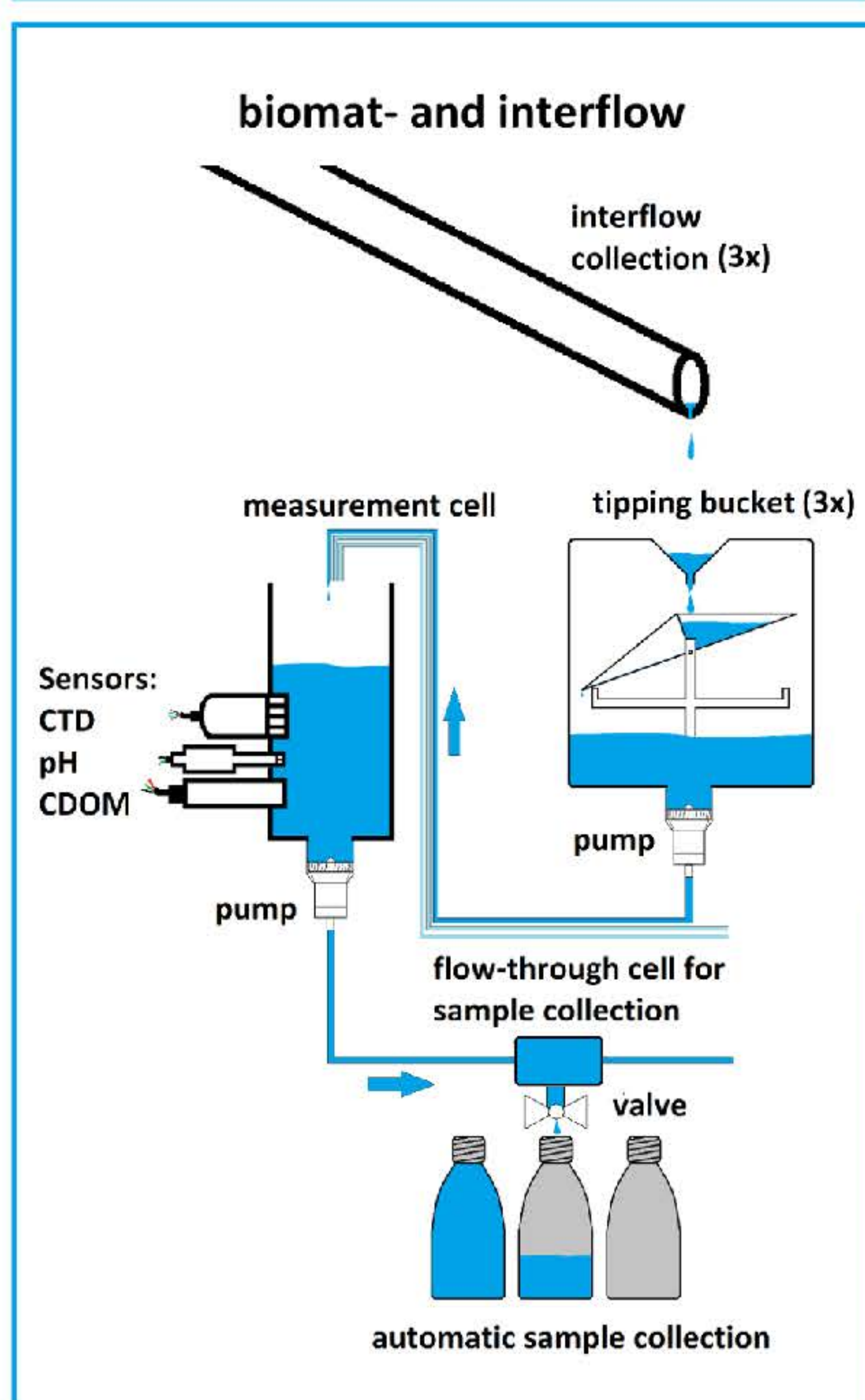
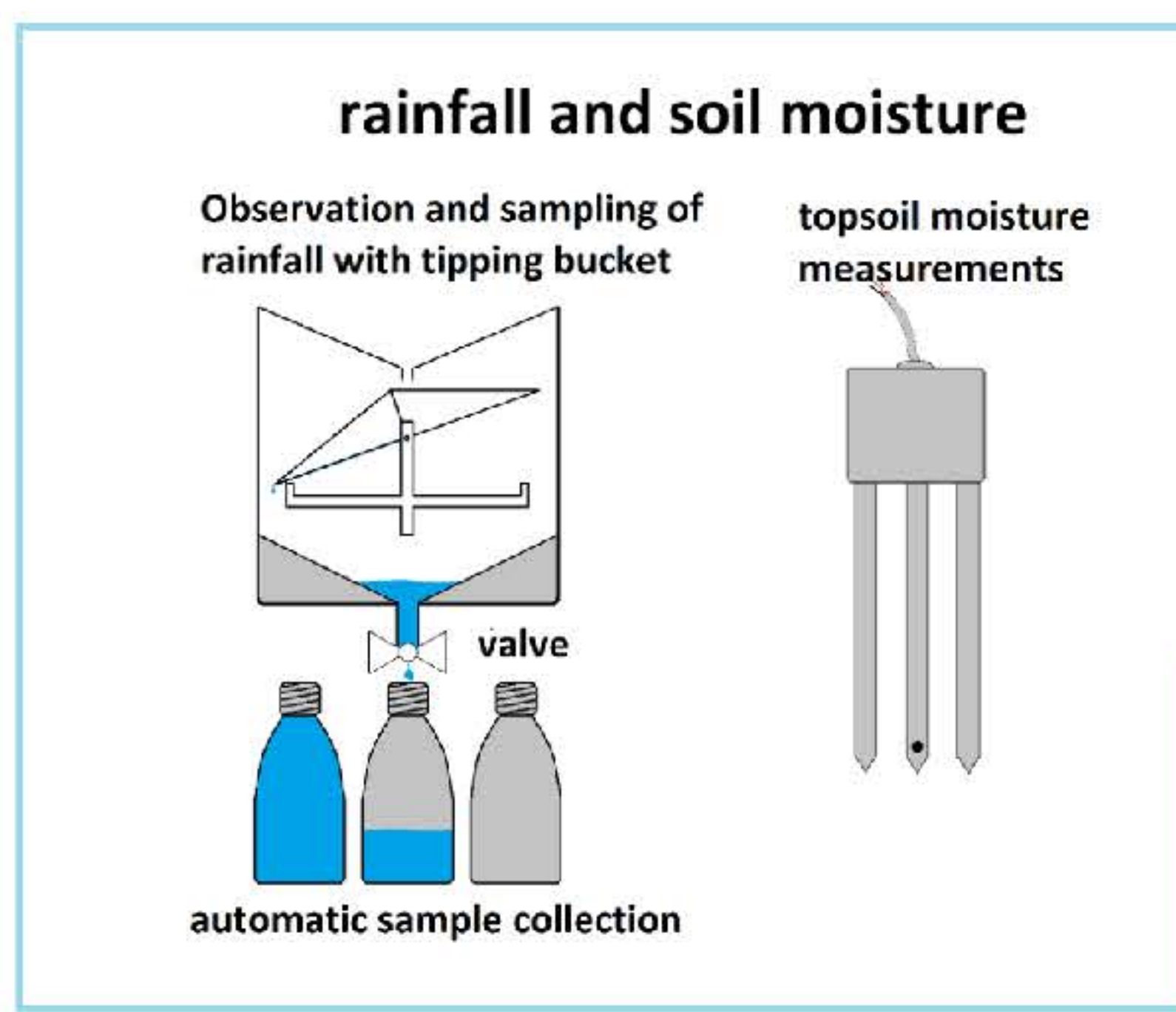


Project aims

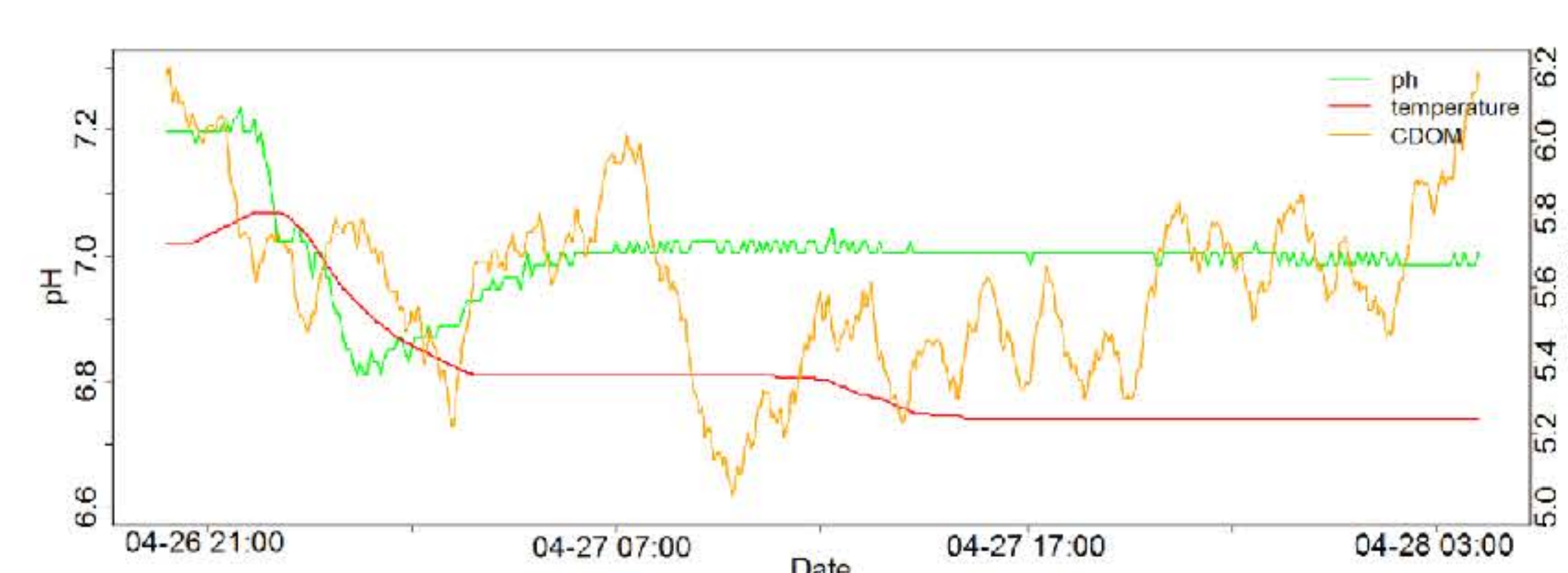
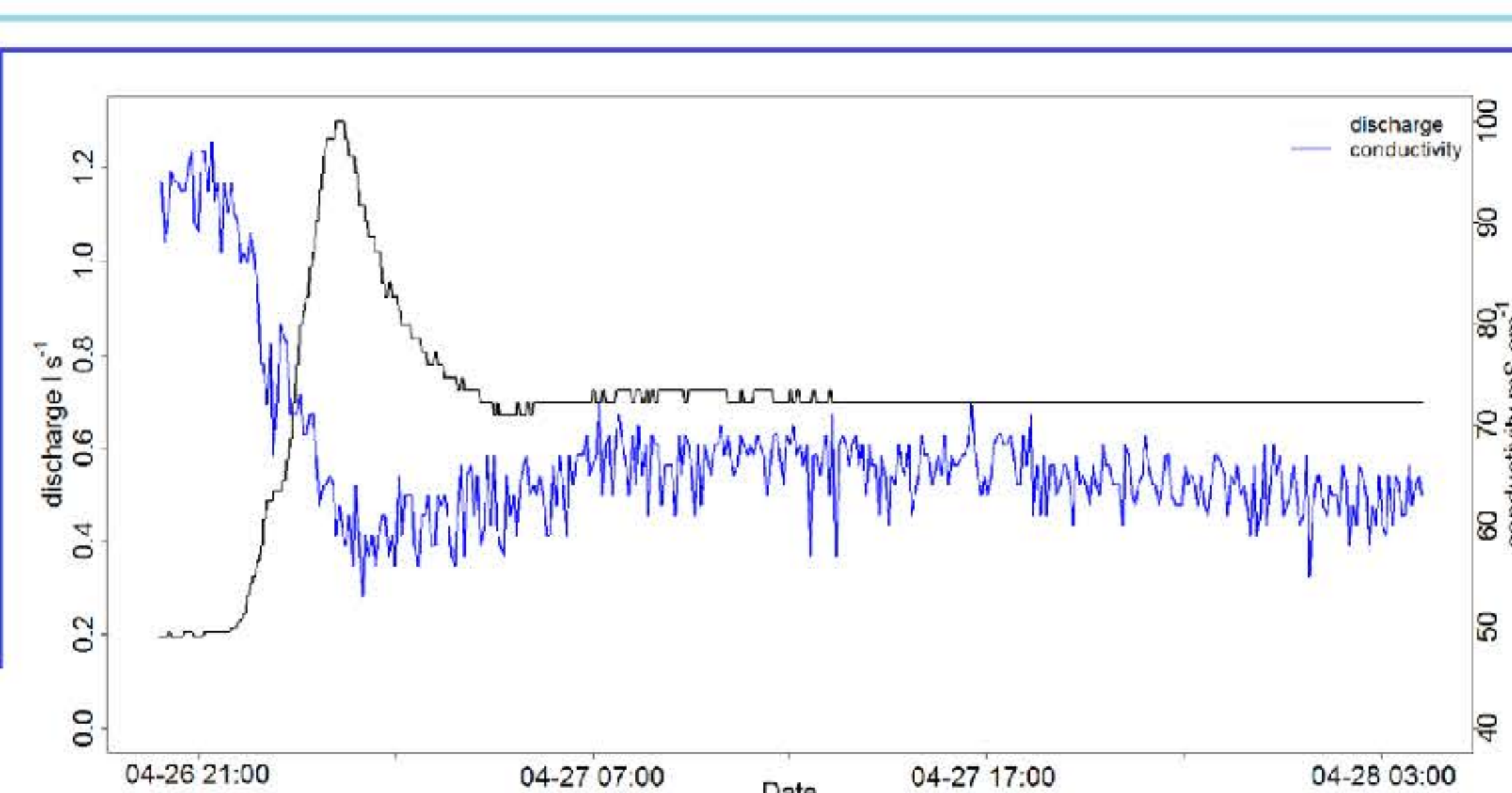
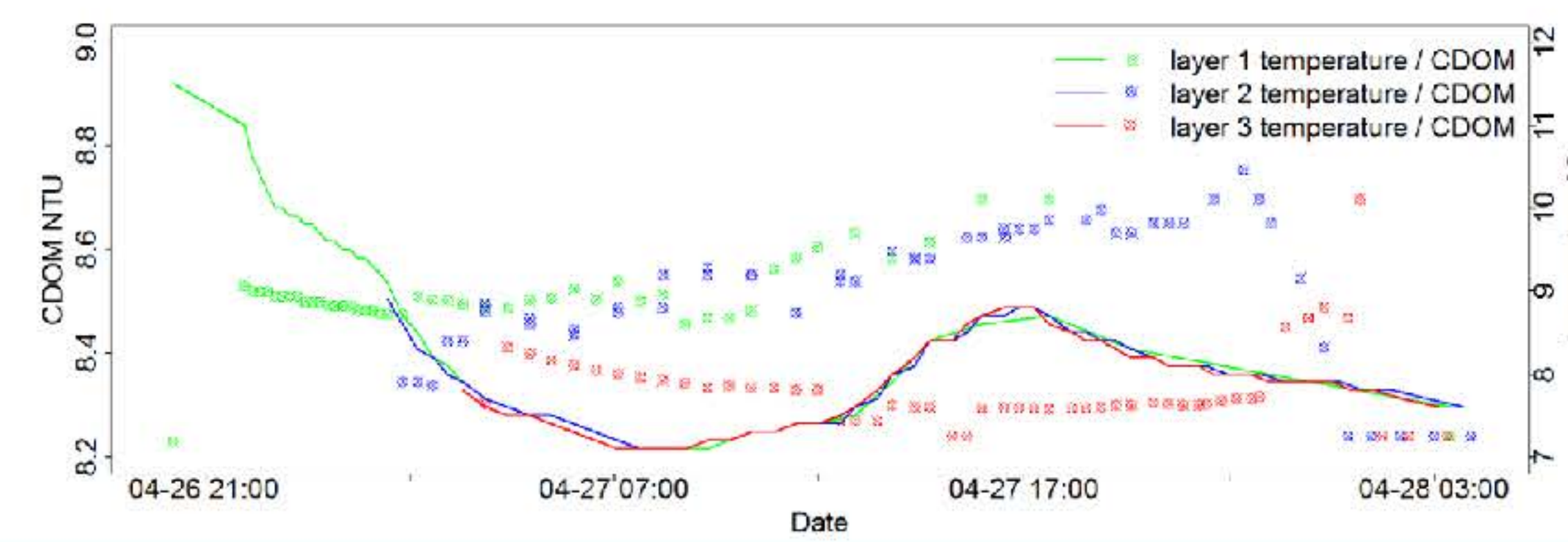
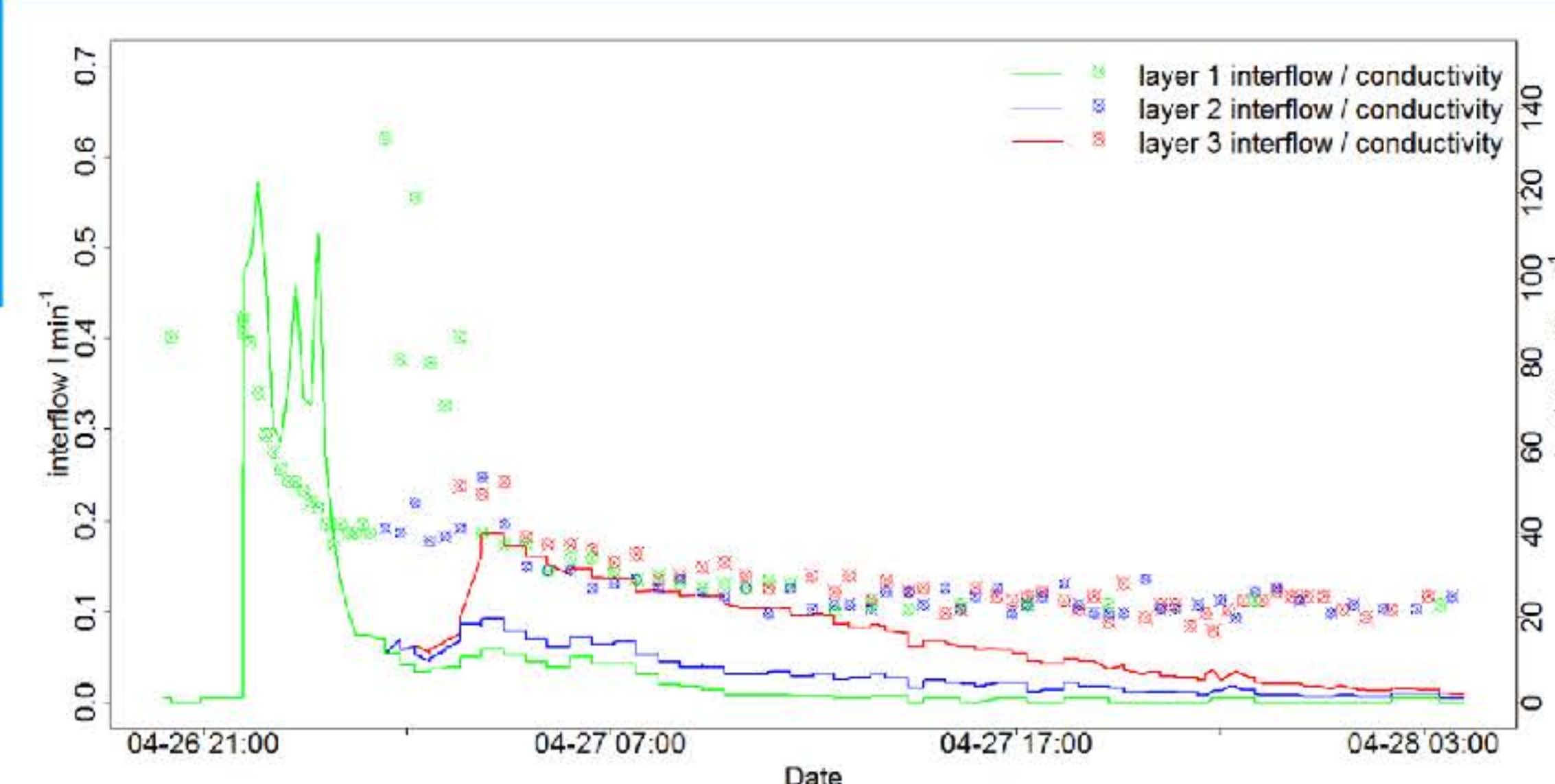
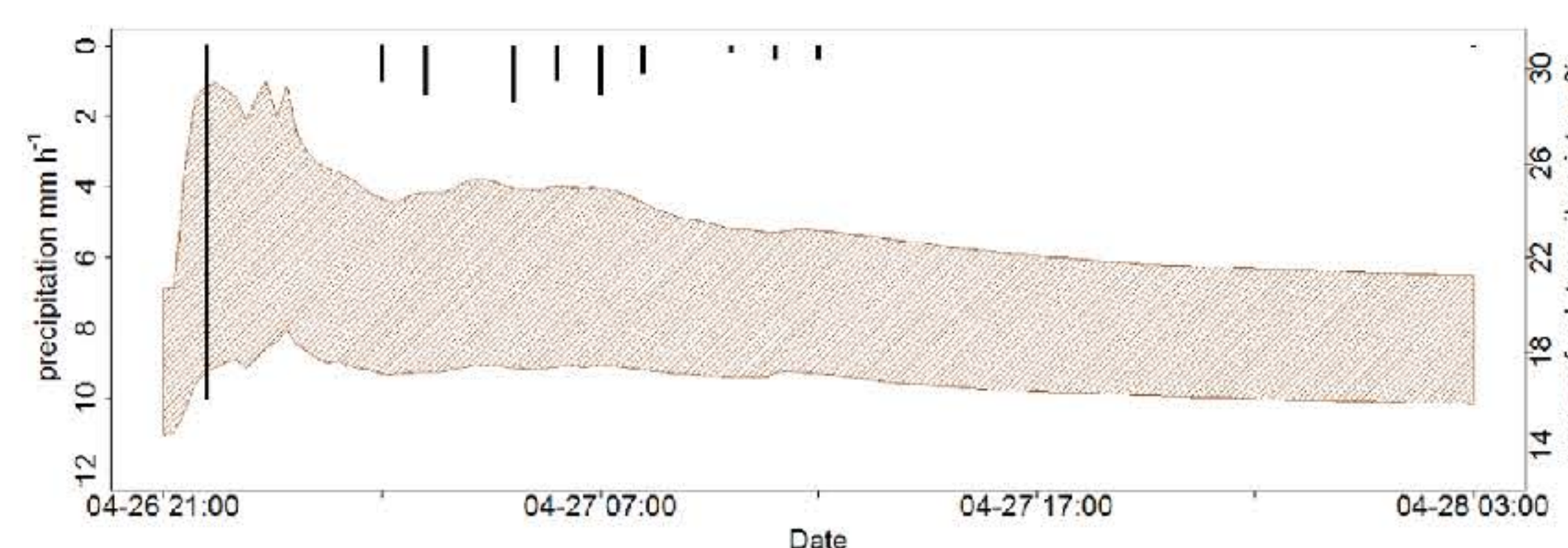
As a prearrangement for the final project goal - the observation of PO_4 dynamics in hydrological pathways - a measurement system was set up that provides hydrometrical and hydrochemical data as well as the ability to automatically draw samples from different hydrological subsystems. It is designed to be almost maintenance free, with autonomous energy supply and remote data transmission. The measurement system incorporates rainfall, soil moisture, biomat- and interflow as well as groundwater observation and spring discharge. Current study sites are Konventwald, Mitterfels and Vessertal.

Practical implementation



Exemplary results

A 32 hour interflow event from the site Konventwald, April 2014



Next steps

On-line photometric measurements:

Field deployable automatic photometers (Green Eyes NuLab) with detector heads for PO_4 and SiO_4 will be used to sample interflow, groundwater and runoff multiple times per hour. While PO_4 measurements are the primary objective of this study, the SiO_4 measurements will serve as a proxy of water contact time with the bedrock material.

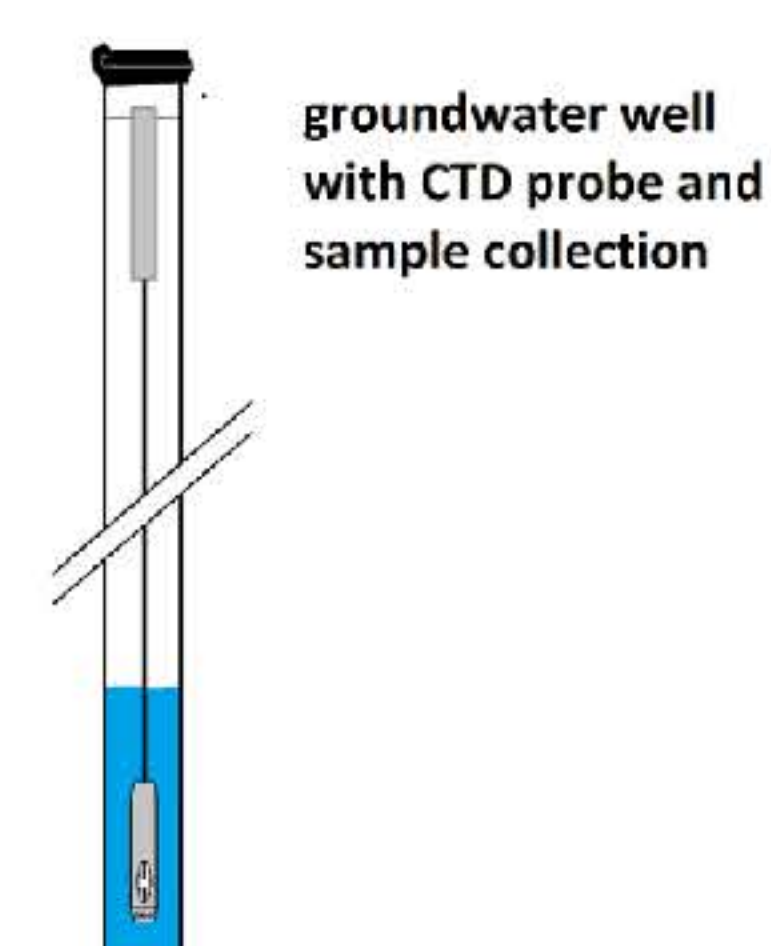
Water age dating:

Sampling of stable water isotopes will enable for the estimation of travel time distributions of water within the catchment.

In combination with PO_4 measurements this could lead to a better understanding of sources and detachment processes of PO_4 from the catchment especially during stormflow events, where a high connectivity of hydrological subsystems leads to a mixing of water of different origin.

Groundwater well:

Groundwater wells need to be connected to the measurement and sampling system to complete the coverage of the catchment.



Perspective

The measurement system which is deployed on three field sites has been operational for several months each and proven to work reliably and with minimal maintenance. The automatic measurements have been verified by continuous manual measurements. A multitude of biomat-, interflow and stormflow events of various size have been recorded. It is planned to start the PO_4 sampling this fall at the site Konventwald.